AAL
AMBIENT ASSISTED LIVING

ALICE
Assistance for Better Mobility and Improved Cognition of Elderly Blind and Visually Impaired

comland

alpineon))

I&IMS

MINES TELECOM
INSTITUT
Mines-Télécom

GRANITE 5
Websites That Work

COMMUNICATION
FOR BLIND AND
DISABLED PEOPLE

ZVEZA
SLEPIH

❑ **Project start**
   June 2013
❑ **Project end**
   November 2014

❑ **Countries involved**
   Slovenia
   France
   Spain
   United Kingdom

❑ **Contact**
   Dr. Davorka Sel
   Project leader
   Comland, Slovenia
   Davorka.Sel@comland.si

   www.alice-project.eu

CONTEXT

People that have an impaired visual cognitive system face problems with an overall contextual understanding of space semantics, interaction with surrounding objects and have serious difficulties with planning, orientation, communication and navigational skills.

- 285 million visually impaired people all over the world (among which 39 million blind)
- In Europe: 28 million visually impaired and 2 million blind. The degree of visual impairment is increasing with an ageing population

OBJECTIVE

The objective is to improve the quality of life of ageing people with impaired vision by providing a **navigational assistant with cognitive abilities**, integrated in light mobile devices (smart phones, tablets and laptops). The navigational assistant will be able to offer visually impaired users a cognitive description based on a fusion of perceptions gathered from a range of sensors, including image/video, GPS, audio and mobile-related.

Canes and dogs are still today the most reliable blind assistants. The acceptance of new technologies is conditioned by performance/reliability factors as well as by the respect of the user needs and practices.

ALICE APPROACH

Set up a general public, affordable hardware platform including a smart phone and a laptop. Exploit all available mobile sensors (camera, GPS, audio) to perform analysis and provide feedback (alerts, positioning information) in an appropriate, non-invasive and enactive manner. The system will include technologies for vision-based, real-time interpretation of the captured scenes, landmark recognition, annotated accessible maps as well as visually impaired-adapted human machine interfaces.

Involve the end users in the development of the ALICE navigational assistant throughout the lifetime of the project, starting from requirements/use case specification and up to real life performance testing, evaluation and validation.

ALICE

Assistance for Better Mobility and Improved Cognition of Elderly Blind and Visually Impaired

ALICE TECHNOLOGIES

The ALICE project is combining research developments in cognitive sciences, psychology, computer vision, artificial intelligence and robot navigation.
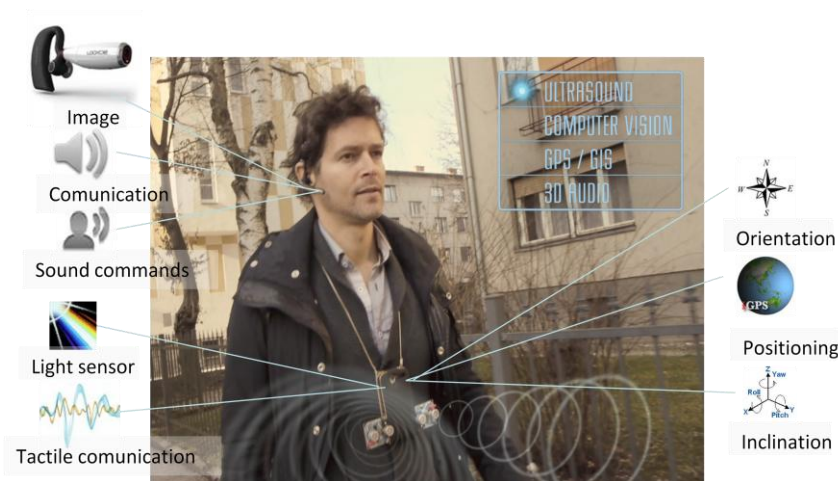
- Computer vision and machine learning for automatic scene understanding: real-time detection of obstacles and moving objects (cars, pedestrians, bicycles), identification of crossings, traffic lights, landmarks...

- Accessible maps: specification of annotated itineraries with landmarks (OpenStreetMaps) and exploitation of enhanced GPS navigation techniques
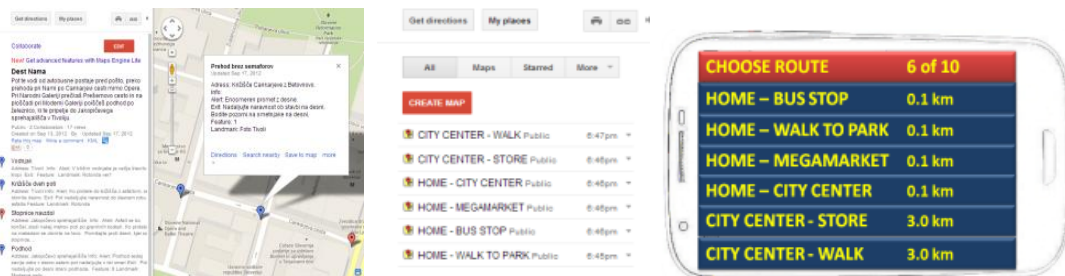
- Adapted human-machine interfaces: non-invasive feedback with minimum verbalisation and enactive, earconic/haptic signals